OCTOBER 1973

DRiVER

TIRE SPECIAL

MIRRORS

DRIVER

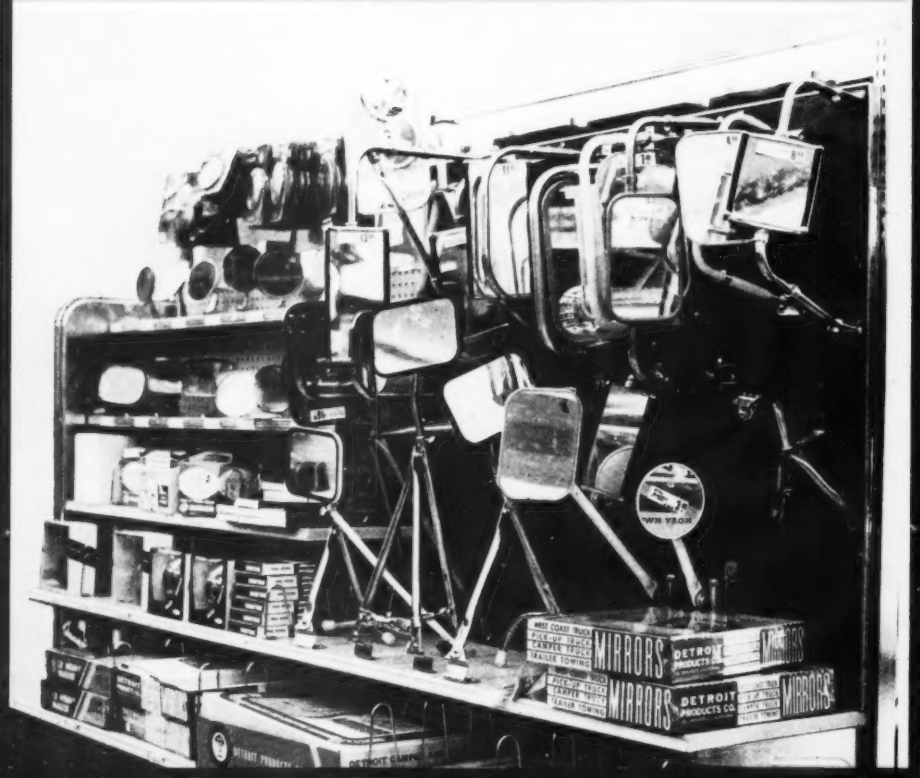
Attention "blind spot" to different drivers and you get all kinds of comments. Some will say it's there, but you can't do anything about it. Others claim there's no such thing as a blind spot. Still others promote far-out methods for overcoming the blind spot by unusual mirror-aiming techniques.

One thing is for sure, the blind spot does exist, and a driver is in for trouble if he doesn't deal with it.

continued

(left)
Two mirrors are always better than one —especially for the motorcyclist.

(right)
Here's where knowing what's going on behind probably prevented an accident. The truck in the photograph is pulling **into** a space opened by the driver of the photographer's car. The driver of the photog's car had been watching the activities of the truck as it approached at high speed behind him. When it was apparent the truck was going to attempt to pass, despite the fact there was no room in the line of cars ahead of the photographer, our driver made ample room by slowing down. If he hadn't made the room . . . well, you can see what might have happened.



(left)
Mirrors come in many shapes, sizes, and qualities. The more you can increase your rearward vision coverage, the better. But when you select additional mirrors, make sure they are good quality and correctly tailored to the use you have planned for them.

REFLECTIONS ON MIRRORS

The good driver uses his mirrors AND his head all the time

DRIVER

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THE EDITOR SPEAKS

DOUBLE CLUTCH

Fender benders can cost a lot, even if you are not at fault

Your nice shiny car was crunched in the parking lot. Bad news, right? Well, it can be even worse. Let's say you were in the car at the time, and the accident was not your fault. Home free? Not quite. In fact, if you don't take the right steps you can end up paying to have your own car fixed. There are ways to avoid this. Here's how:

- Do not move the vehicles unless they are causing a severe tie-up, or are likely to cause another accident. If the vehicles are moved, and there are no witnesses to the accident, you will be out of luck when it comes to determining fault.
- Call the police immediately, and stay with the vehicles until the police investigators arrive.
- Obtain the other driver's name, address, phone number, and driver's license number. Jot down his car registration number, as well as the year, model, and color of his vehicle. Encourage the other individual to remain at the scene until interviewed and dismissed by the police.
- If there are any witnesses to the accident, obtain their names and addresses.
- If a camera is available, take a series of photographs of the accident from various angles and distances.

Following these steps will make it possible for the accident to be properly investigated, and the blame correctly placed. This is important for insurance companies to honor claims, or for you to make a successful claim against the other party in court.

There is much more to know and do if you are involved in an accident. DRIVER plans a feature article on the subject in the near future. Until then, following the above steps in the case of a minor fender bender can save you a lot of bread, and avoid trouble with the law. ●

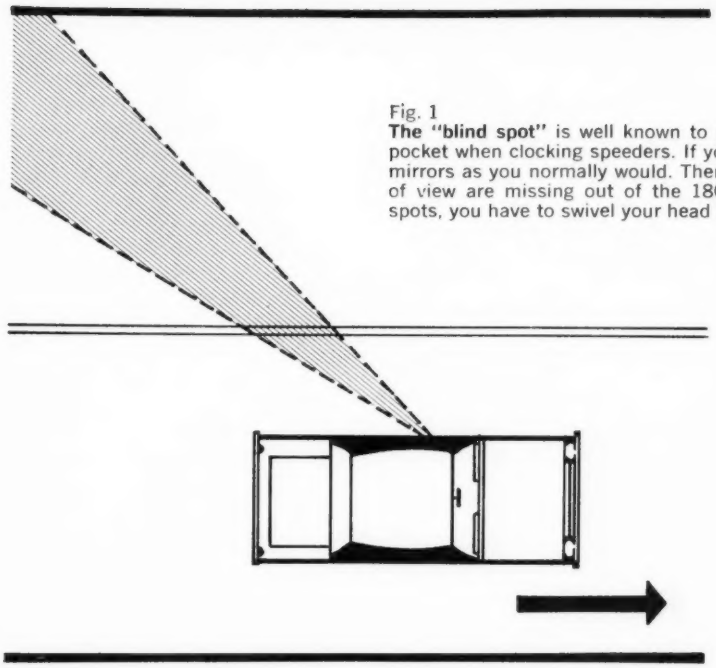
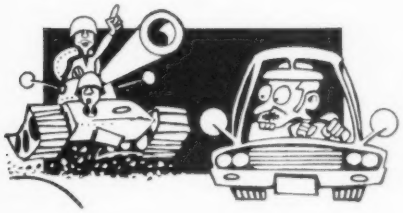


Fig. 1
The "blind spot" is well known to state highway patrolmen, who cruise in this invisibility pocket when clocking speeders. If you don't believe you have such a blind spot, adjust your mirrors as you normally would. Then have a careful look in the mirrors to find what chunks of view are missing out of the 180-degree half-pie located to the rear. To fill the blank spots, you have to swivel your head as well as use your mirrors.

This involves knowing what your car's mirrors can do for you, and how to use them to best advantage. It also involves some head-twisting to cover areas not reflected in the mirrors (Fig. 1).

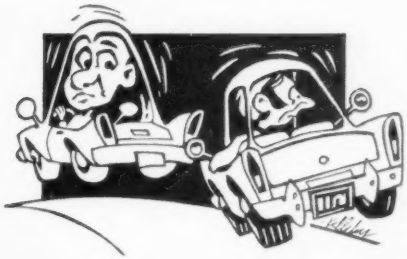
DRIVER found one idea universal among the professional drivers we talked to on the subject of auto mirrors. They all indicated they use their mirrors constantly. This includes not only for lane changes, passing, backing up, pulling in-and-out, but *all* the time. In other words, they feel it is just as important to know what is going on all around their vehicle as it is to know what is happening up front with the traffic.

We put together some ideas and comments which we hope will be helpful and will keep you from crunching that Porsche 914 as you back out of your garage tomorrow morning.



• The more mirrors you use the better off you are, within reason, of course. In addition to the left-side exterior mirror, it's smart to have the same thing going for you on the right side of the car. In multi-lane freeway driving you need to know what's approaching from behind on your right side.

• Make certain your vehicle's mirrors are properly positioned and clean before you start driving.



• By moving your head fore and aft as well as swiveling your neck, you can double or triple your viewing area. This extra effort just may keep you from getting creamed from behind or keep you from smacking into someone as you change lanes.

• When backing a car, turn your head and look through the rear window. It won't always work just to glance behind, then rely totally on what you see in the mirrors as you back. The scene behind changes too quickly, particularly in a public parking lot. Remember the blind spot.

• Use your mirrors to help keep in touch with what's going on ALL around you. This is vital in freeway-type driving where thorough monitoring makes it possible for you to make safe lane changes, and possibly avoid being on the receiving end of a rear-ender.

• If you drive a camper or pull a trailer, make doubly sure your vehicle meets or exceeds your state's requirements for rearview mirrors. When backing go extra slowly, and use a spotter.

continued

A GLANCE AHEAD

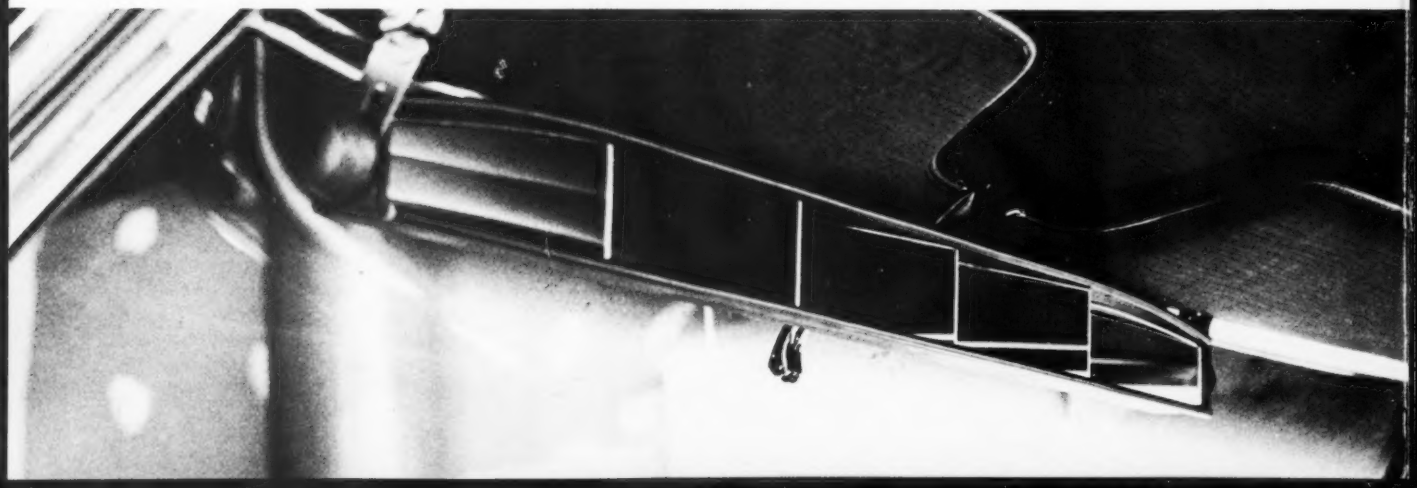
Faulty or inadequate rear vision results in about six million accidents each year. This is why the government has established new rear-vision standards which will apply to all cars, trucks, and buses built after 1976. Design proposals include a periscope arrangement which displays a full 180-degree rearward view.

But until the new systems become available, you are going to have to rely on those rearview mirrors, a swivel neck, and a mind tuned into the traffic scene around you. •

Several types of mirrors on the market . . . Many new cars are available with an exterior mirror adjustable from inside the car (top photo). This makes for easy positioning with minimum distraction from the important task of driving.

The limited view offered by the large standard rearview mirror on certain vehicles is easily augmented with this panoramic "spot" mirror arrangement (right).

This panoramic-type rearview mirror is a real blind-spot beater (below). The arrangement of a group of separate, carefully angled mirrors has an advantage over other types of single-unit panoramic mirrors; distortion is minimized.



TIRE SPECIAL

There has always been a wealth of popular misconceptions about tires. And, vast changes in tire technology in the last few years have added to the confusion—especially in regard to radial-ply tires.

So, with this article we will try to clear up some of the common tire misconceptions—especially those dealing with radials. We'll also offer some general tips on buying and caring for tires.

TIRE TYPES

"Bias," "belted," and "radial" are probably familiar terms to most of you—especially if you've checked into tires in the last few years. These terms actually refer to the tire's ply construction. However, the essential differences between these tires are the handling characteristics, tread strength, tread mileage, and price.*

The bias-ply, or conventional tire is the lowest priced tire, but offers the least tread mileage at the highest cost per mile. The bias tire is best suited to light around-town type driving because it wears extra-quickly and is prone to failure under hard use.

The bias-belted tire is simply an improvement of the conventional tire. It uses special cord belts underneath the tread to add strength and stability to the tread. The belted tire is stronger and promotes better handling and tread mileage than the conventional tire. It is well suited for today's higher speed driving, and is standard equipment on most new cars.

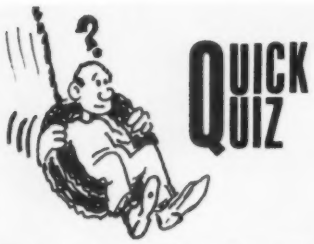
continued

** See "Radial Revolution," March '73 DRIVER for more info on tire types.*

continued

TIRE SPECIAL

The radial-ply tire is also belted, but it differs from a conventional tire because its body plies run around the tire body in hoop fashion, or radially, instead of meeting at an angle in the center of the tire. This type of body ply construction makes the radial the strongest, safest, best handling, and longest mileage tire of all. The radial's only real disadvantage is its high initial cost. However, it offers the lowest cost per mile of any tire, since tread mileage over 50,000 miles is not uncommon. The tire buyer's quiz (Fig. 1) can help you decide which tire is best suited to your driving needs.



This short quiz adapted from one published by the Firestone Tire and Rubber Co. can give you a good picture of the tire you need.

Add the point total of these five questions.

1. How fast do you drive? Seldom over 60 (2 points), mostly over 60 (3 points).

2. How often on rough roads? Seldom (1 point), frequently (2 points), mostly (3 points).

3. How often with a heavy load? (Two or more adult passengers, heavy cargo, or both). Seldom (1 point), frequently (2 points), mostly (3 points).

4. How many more miles will you drive this car? (Multiply the miles per year by the number of years you'll keep the car.) 10,000 or less (1 point), 25,000 or less (2 points), 40,000 or more (3 points).

5. What kind of driver are you? Easy (1 point), average (2 points), hard (3 points).

If your point total is fewer than 7, you can use a bias-ply tire in the lower price range. 8 to 11 points should lead you to a belted tire, or at least a high-performance bias-ply. If you racked up over 14 points, you'd better get into a radial, or at least a top-quality belted tire.

Fig. 1

BELTS?

Now that belted and radial tires (also belted) are considered the "hot setup" in the tire world—the question of belts is bending some people's minds. For instance, many people think a belted tire is always fiberglass-belted and a radial must be made with steel. Actually, the tread support belts used in both of these tire types may be rayon, polyester, fiberglass, or steel. There is a difference in the strength, guarantee, and price of these tires, depending on the type of belts used.

An all-fabric tire is usually less expensive, but carries less of a guarantee than a tire belted with fiberglass or steel. Steel is considered to be the strongest belting material, but is also the most expensive. Fiberglass generally runs a pretty close second to steel in both strength and price.

The important point is to know that there is a difference in the construction of belted and radial tires. This is especially true with radials—many people buy radials assuming they are steel-belted when they may be an all-fabric tire. A tire dealer can explain a particular tire's construction and relative advantages, so you can choose the tire which best fits your needs and budget. The tire's construction is also clearly molded into the sidewall of every tire made since 1968 (Fig. 2).

CODE

One item that often baffles the average tire buyer unnecessarily is the new tire size-service designation code. Basically, the new code indicates the very same thing the old code did, but in a different way. For instance, if a tire was labeled 7.75-14 under the old system, you knew it was about 7-¾ inches wide and fit on a 14-inch rim.

A popular replacement size for that particular tire would be labeled F78-14 today. The 14 means it fits on a 14-inch rim, as before, and the F refers to the tire's size—the equivalent of a 7.75 in this case. The number following the letter is an addition to the old code, and is the information you need to be most concerned with. This is the aspect ratio, or the tire's body height compared to its width. In this case, the tire is 78 percent as high as it is wide.

Some foreign-made radials use a special coding system which combines metric measures and inches. A tire dealer can explain this system, as well as the standard code if you are unsure of what tire you need. The tire size comparison chart (Fig. 3) should further clarify exactly how the current tire codes work.

PROFILE

Aspect ratios are especially important because of the recent trend toward lower, wider tires, or "low-profile" tires, as they are called. There are several

continued

Everything you need to know about your tire is clearly molded into the sidewall. Look at your vehicle's tire sometime—it makes interesting reading.

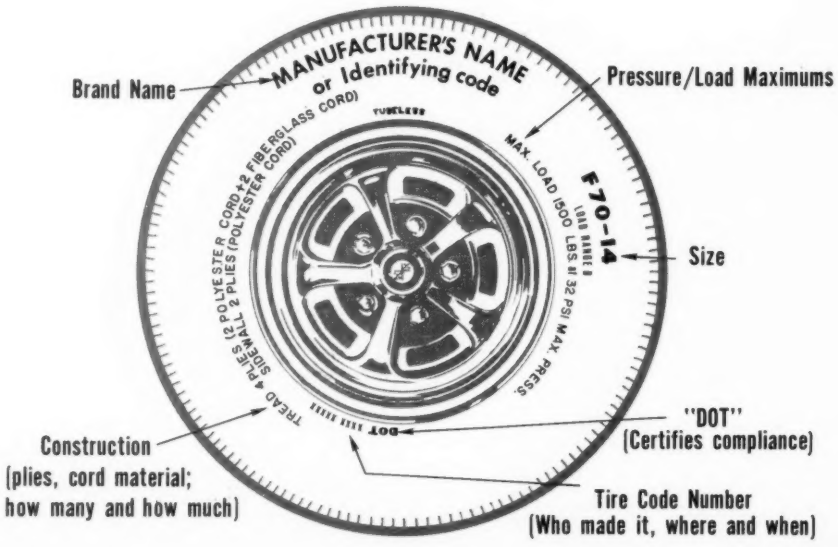


Fig. 2

AUTOMOBILE TIRE SIZE AND LOAD AND INFLATION TABLES

TIRE SIZE DESIGNATIONS

INTERCHANGEABILITY IS NOT IMPLIED — SEE NOTE 4

Bias		Bias and Belted Bias				Radial				LOAD LIMITS (LBS. PER TIRE) — COLD INFLATION PRESSURES—POUNDS PER SQUARE INCH											
1965-On	Pre-1965	'78 Series'	'70 Series'	'60 Series'	'50 Series'	Metric	'78 Series'	'70 Series'	'60 Series'	20	22	24	26	28	30	32	34	36	38	40
6.00-13						165 R 13				770	820	860	900	930	970	1010	1040	1080	1110	1140
		A78-13	A70-13	A60-13			AR 78-13	AR 70-13	AR 60-13	810	860	900	940	980	1020	1060	1090	1130	1160	1200
6.50-13		B78-13		B60-13		175 R 13	BR 78-13	BR 70-13	BR 60-13	890	930	980	1030	1070	1110	1150	1190	1230	1270	1300
		C78-13		C60-13			CR 78-13			950	1000	1050	1100	1140	1190	1230	1270	1320	1360	1400
7.00-13						185 R 13				980	1030	1080	1130	1180	1230	1270	1310	1360	1400	1440
										980	1030	1080	1130	1180	1230	1270	1310	1350	1400	1440
		D78-13	D70-13	D60-13			DR 78-13	DR 70-13		1010	1070	1120	1170	1220	1270	1320	1360	1410	1450	1490
						195 R 13				1060	1110	1170	1220	1280	1320	1370	1420	1470	1510	1560
							ER 78-13		ER 60-13	1070	1130	1190	1240	1300	1350	1400	1440	1490	1540	1580
						155 R 14				780	820	860	900	940	970	1010	1040	1080	1110	1140
6.45-14	6.00-14									860	910	960	1000	1040	1080	1120	1160	1200	1240	1270
		B78-14					BR 78-14			840	900	930	980	1020	1060	1100	1130	1170	1210	1240
						165 R 14				890	930	980	1030	1070	1110	1150	1190	1230	1270	1300
										860	910	960	1000	1040	1080	1120	1170	1200	1240	1280
6.95-14										950	1000	1050	1100	1140	1190	1230	1270	1310	1350	1390
	6.50-14	C78-14	C70-14				CR 78-14	CR 70-14		950	1000	1050	1100	1140	1190	1230	1270	1320	1360	1400
						175 R 14				930	990	1030	1080	1130	1170	1210	1250	1300	1330	1370
										950	1000	1050	1100	1140	1190	1230	1280	1320	1360	1400
		D78-14	D70-14	D60-14			DR 78-14	DR 70-14		1010	1070	1120	1170	1220	1270	1320	1360	1410	1450	1490
7.35-14										1040	1100	1160	1210	1260	1310	1360	1400	1450	1490	1540
	7.00-14	E78-14	E70-14	E60-14			ER 78-14	ER 70-14		1030	1100	1140	1190	1240	1290	1340	1380	1430	1470	1520
						185R 14				1070	1130	1190	1240	1300	1350	1400	1440	1490	1540	1580
										1040	1100	1160	1210	1260	1310	1360	1410	1450	1500	1540
7.75-14										1150	1210	1270	1330	1390	1440	1500	1550	1600	1650	1690
	7.50-14	F78-14	F70-14	F60-14			FR 78-14	FR 70-14	FR 60-14	1150	1230	1280	1340	1390	1450	1500	1550	1600	1650	1700
						195 R 14				1160	1220	1280	1340	1400	1450	1500	1550	1610	1650	1700
										1150	1210	1270	1330	1390	1440	1500	1540	1590	1640	1690
8.25-14										1250	1310	1380	1440	1500	1560	1620	1670	1730	1780	1830
	8.00-14	G78-14	G70-14	G60-14		205 R 14	GR 78-14	GR 70-14	GR 60-14	1240	1320	1380	1440	1500	1560	1620	1670	1730	1780	1830
										1250	1310	1380	1440	1500	1560	1620	1680	1730	1780	1830
8.55-14										1360	1430	1510	1580	1640	1710	1770	1830	1890	1950	2000
	8.50-14	H78-14	H70-14	H60-14	H50-14		HR 78-14	HR 70-14		1330	1420	1480	1550	1610	1670	1740	1790	1850	1910	1960
						215 R 14				1360	1440	1510	1580	1650	1710	1770	1830	1890	1950	2010
										1360	1430	1510	1580	1640	1710	1770	1830	1890	1950	2010
8.85-14										1430	1510	1580	1660	1730	1790	1860	1920	1990	2050	2100
	9.00-14	J78-14	J70-14	J60-14			JR 78-14	JR 70-14	JR 60-14	1430	1510	1580	1660	1730	1790	1860	1920	1990	2050	2100
						225 R 14				1430	1500	1580	1650	1720	1790	1860	1920	1980	2040	2100
										1430	1510	1580	1660	1730	1790	1860	1920	1980	2040	2100
	9.50-14		L70-14	L60-14				LR 70-14		1540	1640	1700	1780	1850	1930	2000	2060	2130	2200	2260
										1520	1600	1680	1750	1830	1900	1970	2040	2100	2170	2230
					N50-14					1700	1790	1880	1970	2050	2130	2210	2280	2360	2430	2500
		A78-15					AR 78-15			810	860	900	940	980	1020	1060	1090	1130	1160	1200
		B78-15					BR 78-15	BR 70-15		890	930	980	1030	1070	1110	1150	1190	1230	1270	1300
	6.00-15			B60-15						890	940	980	1030	1070	1110	1150	1190	1230	1270	1300
						165 R 15				870	910	960	1000	1050	1090	1130	1170	1200	1240	1280
6.85-15										950	1000	1050	1100	1140	1190	1230	1270	1320	1360	1390
	6.50-15	C78-15	C70-15	C60-15			CR 78-15	CR 70-15		950	1000	1050	1100	1140	1190	1230	1270	1320	1360	1400
						175 R 15				980	1040	1080	1130	1180	1230	1270	1320	1360	1400	1440
										950	1000	1050	1100	1140	1190	1230	1280	1320	1360	1400
		D78-15	D70-15				DR 78-15	DR 70-15		1010	1070	1120	1170	1220	1270	1320	1360	1410	1450	1490
7.35-15										1070	1130	1180	1240	1290	1340	1390	1440	1480	1530	1570
		E78-15	E70-15	E60-15			ER 78-15	ER 70-15	ER 60-15	1070	1130	1190	1240	1300	1350	1400	1440	1490	1540	1580
						185 R 15				1070	1130	1180	1240	1290	1340	1390	1430	1480	1520	1570
7.75-15						195 R 15				1150	1210	1270	1330	1380	1440	1490	1540	1590	1640	1690
	6.70-15	F78-15	F70-15	F60-15			FR 78-15	FR 70-15	FR 60-15	1110	1190	1230	1290	1340	1400	1450	1500	1550	1590	1640
										1160	1220	1280	1340	1400	1450	1500	1550	1610	1650	1700
						205 R 15				1240	1300	1370	1430	1490	1550	1610	1660	1720	1770	1820
	7.10-15	G78-15	G70-15	G60-15	G50-15		GR 78-15	GR 70-15	GR 60-15	1190	1270	1320	1380	1440	1500	1550	1600	1660	1710	1760
8.25-15										1250	1310	1380	1440	1500	1560	1620	1680	1730	1780	1830
										1250	1310	1380	1440	1500	1560	1620	1670	1730	1780	1830
						215 R 15				1340	1410	1480	1550	1620	1680	1740	1800	1860	1910	1970
	7.60-15	H78-15	H70-15	H60-15	H50-15		HR 78-15	HR 70-15	HR 60-15	1310	1400	1450	1520	1580	1640	1710	1760	1820	1880	1930
8.55-15										1360	1440	1510	1580	1650	1710	1770	1830	1890	1950	2010
										1360	1430	1510	1580	1640	1710	1770	1830	1890	1950	2000
8.85-15						225 R 15				1430	1510	1580	1650	1720	1790	1860	1920	1980	2040	2100
	8.00-15	J78-15	J70-15	J60-15			JR 78-15	JR 70-15	JR 60-15	1380	1470	1530	1600	1670	1730	1800	1860	1920	1980	2040
										1430	1500	1580	1650	1720	1790	1860	1920	1980	2040	2100
9.00-15										1460	1540	1620	1690	1760	1830	1900	1970	2030	2090	2150
	8.20-15		K70-15					KR 70-15		1470	1570	1630	1710	1780	1850	1920	1980	2050	2110	2170
										1460	1540	1620	1690	1770	1830	1900	1970	2030	2090	2150
9.15-15										1510	1600	1680	1750	1830	1900	1970	2030	2100	2160	2230
		L78-15	L70-15	L60-15			LR 78-15	LR 70-15	LR60-15	1520	1600	1680	1750	1830	1900	1970	2040	2100	2170	2230
						235 R 15				1510	1600	1680	1750	1830	1900	1970	2040	2110	2170	2230
		M78-15								1610	1700	1780	1860	1940	2020	2090	2160	2230	2300	2370
										1310	1380	1450	1515	1580	1640	1700	1760	1820	1870	1930
7.00-15		N78-15			N50-15			MR 70-15		1700	1790	1880	1970	2050	2130	2210	2280	2360	2430	2500
										1700	1810	1880	1970	2050	2130	2210	2290	2360	2430	2500
8.90-15										1075	1135	1195	1250	1300	1350	1400	1450	1500		
6.00-16										1215	1280	1345	1405	1465	1525	1580	1635	1690		
6.50-16										1365	1440	1515	1585	1650	1715	1780	1840	1900		
7.00-16																				

Load Range B (4-ply rating)
Load Range C (6-ply rating)
Load Range D (8-ply rating)

NOTES:

1. **Ply Rating** • Older tires marked "4-ply rating/2-ply" have the same load carrying capacity as a current or most recent 4-ply tire of the same size at the same inflation. Tires marked "8-ply rating/4-ply" have the same load carrying capacity as 8-ply rating tires of the same size at the same inflation, regardless of the actual number of plies. These criteria apply even though no industry-wide definition of ply rating exists.

2. **Load Range** • The "load range" system is now being used in tire marking with letters (e.g., Load Range B, C, D, etc.) to identify tires with their particular load and inflation limits and service requirements. While the old ply rating system has been phased out, both designations may be used on tire sidewalls and are shown in the tables. For example, Load Range B tires may be marked 4-ply rating/2-ply, or 4-ply; Load Range C tires, 6-ply rating/4-ply, or 6-ply; and Load Range D tires, 8-ply rating/4-ply, 8-ply rating/6-ply, or 8-ply.

3. Maximum inflation and load is that shown in the 32 psi column for Load Range B (4-ply rating) tires, 36 psi for Load Range C (6-ply rating) tires, and 40 psi for Load Range D (8-ply rating) tires.

   This information is also marked on the sidewalls of all new tires, for example, "Max. load 1500 lbs. @ 32 psi max. pressure." (This means **cold** inflation.) For normal operation, inflate to car manufacturer's recommended pressures.

4. If you are considering replacing or mixing present tires (e.g. 7.75-14) with other size designations or types, especially in the wider profiles ("78," "70," "60," or "50 Series"), be sure to check tire or car manufacturer's recommended options for the particular make and model as interchangeability is not always possible. (See owner's manual or sticker instructions in car.)

Fig. 3

good reasons for this change in tire design. Essentially, a lower, wider tire lowers the car's center of gravity and puts more rubber on the road for safer, surer handling under nearly all conditions. The aspect ratio indicates the tire profile—the lower the aspect ratio, the wider the tire. For instance, a 70-series tire is wider than a 78-series. Tires are made in the super-wide 60- and 50-profile series. However, 70 is generally the lowest profile size suited to "normal" driving.

When you're ready to replace tires, you may want to consider going to lower-profile tires. In most cases, this will improve your car's handling and is well worth the additional cost.

Before replacing standard-size tires, however, check your owner's manual or with a reputable tire dealer for the recommended replacement size on your car. In some cases, a wider-than-standard tire is not recommended. Also, don't mix tire sizes or profiles on a car unless approved by a reliable tire dealer.

RADIAL QUESTIONS

Now—let's get into a couple of popular not-so-true beliefs concerning radials. Many people think radials cannot be used on certain cars, and if they are the car's suspension system will fall apart or the car will handle dangerously. But, as reported in the June '73 issue of "Road & Track" magazine, "The consensus among tire industry experts is that radials can be successfully fitted to *any* car."

In the past, car manufacturers have recommended against the use of radials on some of their models. However, this is not a matter of safety, but ride comfort. Some cars, especially pre-1970 American cars, have suspension systems which aren't "tuned" for radial use. If radials are used on these cars, a harsher than normal ride may result. But the B. F. Goodrich Tire Division specifies that radials will improve the handling and performance of any well maintained vehicle.

So, if you have an older car and want to take advantage of the improved handling, safety, gas mileage, and tread life offered by radials, it shouldn't be any sweat—providing the car manufacturer doesn't expressly recommend against radials. In any case, you should check with a reputable tire dealer concerning his recommendations for your car.

CONSIDERATIONS

There are a couple of important considerations when equipping a car with radials, however. Although radials are the best performing tire going, they may not be as well suited for certain types of heavy use as a belted tire. If you drive a van or do a lot of towing, check with a tire dealer before installing radials.

Radials also should not be installed on a car with a worn or damaged suspension system, and they should always be used in a complete set. For best all-round safety and handling, it's generally recommended that tire types not be mixed on a vehicle at any time. However, bias and belted tires may be used together if the belted tires are mounted in a pair on the rear axle. But, because of their radically different handling characteristics, radials should never be used with any other tire type. Manufacturers also recommend against mixing any tires—especially radials—of different sizes, profiles, constructions, and tread design on the same axle or vehicle.

SNOW RADIALS

One of the greatest and still unresolved radial hassles concerns their

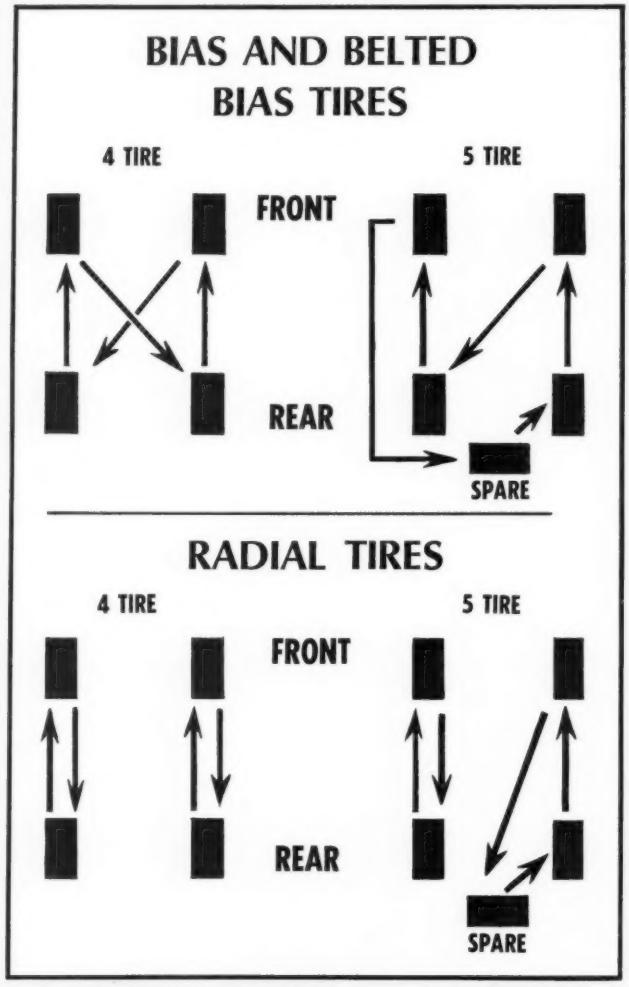


Fig. 4

NEW TIRE ROTATION PLAN – Here are the new patterns of auto tire rotation recommended by the Tire Industry Safety Council for safe, even wear and long mileage. Tires should be rotated every 6,000 to 8,000 miles, or sooner if irregular wear begins to develop.
Source:
Tire Industry Safety Council, Washington, D.C. 20004

MANUFACTURER'S ROTATION RECOMMENDATION FOR RADIAL-PLY TIRES

ARMSTRONG	B. F. GOODRICH	BRIDGESTONE	DUNLOP	FIRESTONE
rotate every 4000-5000 mi.	inspect at 5000-mi. intervals, rotate if necessary	inspect at 5000-mi. intervals; rotate if necessary; criss-cross textile-belted every 7000 mi.	rotate every 6000-8000 mi.	rotate every 6000-8000 mi.

GATES	GENERAL	GOODYEAR	MICHELIN	PIRELLI	UNIROYAL
rotate every 4000 mi.	rotate every 6000 mi.	rotate every 6000-8000 mi.	rotate only if necessary	rotate every 5000 mi.	rotate every 5000-6000 mi.

Fig. 5

effectiveness on snow and ice. Some manufacturers claim their standard radial provides better traction on winter road surfaces than a conventional snow tire. However, no state recognizes radials as approved snow tires at this time. Most companies manufacture radial snow tires and specify their use with radials on the front axle to prevent dangerous oversteer.

ROTATION

Another radial hassle which has been resolved is that of rotation. Following extensive controversy and resulting study, a new plan of rotation for bias and belted tires, and a separate rotation pattern for radials, has been adopted by the tire industry. Most manufacturers are now recommending rotation of conventional and belted tires every 6 to 8 thousand miles following the pattern shown in Fig. 4 to maximize tire mileage.

The manufacturers' recommendations for rotation of radials varies, however. Some companies specify regular rotation, while others recommend rotation only if uneven wear develops. Your best bet is to check with your dealer before rotating any radials. Also, the rotation pattern shown in Fig. 4 must be used to prevent serious tire damage. We have included a partial list of some popular manufacturers' rotation recommendations for radials (Fig. 5).

INFLATION

Maintaining proper tire pressure is the most important factor in maximizing tire life. However, many people don't realize that there isn't any one correct inflation pressure. The pressure recommendations given in the owner's manual are for normal driving conditions—this excludes sustained highway speeds or extra weight in the vehicle. Studies have also shown that the manufacturers' recommended inflation levels may be a bit low in many cases. An improvement in handling and tread mileage can usually be achieved by inflating the tires from 2 to 4 pounds over the normal recommendations—especially with radials. You should check with your tire dealer for the *tire* manufacturers' recommended inflation levels for your car—these may differ from the car-maker's specs. Also, you can experiment to find the best inflation levels for your car's tires, as long as you don't exceed the tire's maximum inflation level or go under the minimum recommended by the car manufacturer.

Inflating the tires about 4 pounds over the regular pressure for sustained high-speed driving, as recommended in your owner's manual, is also essential for maximizing tire mileage. This allows the tire to run cooler, decreasing wear and the chance of tire failure. However, be sure not to exceed the maximum inflation level.

LOAD/OVERLOAD

Adjusting tire inflation levels for carrying loads is also an important but overlooked factor in good tire mileage and safety. Most people know that driving with underinflated tires causes excess tread wear and dangerous handling characteristics, as well as making the tires prone to failure. But most people don't stop to think that overloading their car's tires does exactly the same thing.

To keep from overloading your vehicle's tires, first check the tire's load range and load-carrying capacity in your owner's manual or on the tire's sidewall (Fig. 3). Nearly all passenger car tires are load range B, which means they have a maximum inflation of 32 psi. The load capacity varies according to the tire's size, however.

To determine a vehicle's total carrying capacity, simply multiply by four the load capacity shown on the tire's sidewall. For instance, an F78-14 tire has a carrying capacity of 1500 @ 32 psi. This means the vehicle's total carrying capacity is 6000 pounds (4 x 1500) when the tires are at their maximum inflation. The maximum weight and/or inflation levels should never be exceeded on any vehicle.

In many instances, however, you will have additional weight in your vehicle—but less than the maximum capacity.

continued on page 25

Safety measures paid off in spectacular fashion in this year's Sembach Air Base Race

FLUGPLATZRENNEN

Thirty-five pilots in formation, helmeted and securely strapped into their cockpits, nervously grasped the controls at their fingertips. Seconds ticked off as they waited for word from the flight line tower to accelerate and take off.

This time, however, the signal did not come from an air traffic controller, but from a flashing green light and waving flag that triggered speeding race cars down the runway. The start signified the opening of Flugplatzrennen 1973 (Air Base Race), two full days of racing action at Sembach Air Base, Germany, in May.

The international event, which drew more than 500 entries, consisted of practice and time trials on the first day, and 14 separate 10-lap races spanning a variety of classes on the second. Some of the competitive categories were: Series Production cars, Touring and Grand Touring cars, Formula II, III, Vees, Supervees, and Formula Fords.

The German, Swiss and Austrian championship points that were at stake in various classes drew competitors from all across Western Europe.

Sponsored annually for the fifth consecutive year by the German-American International Sports Car Club (ISCC) of Kaiserslautern, Germany, the weekend spectacular attracted more than 6000 spectators.

Time trials and practice laps started on a track wet from the previous evening's rain. This renewed the superstitions of the sponsorship that

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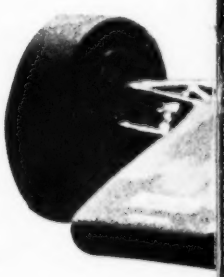
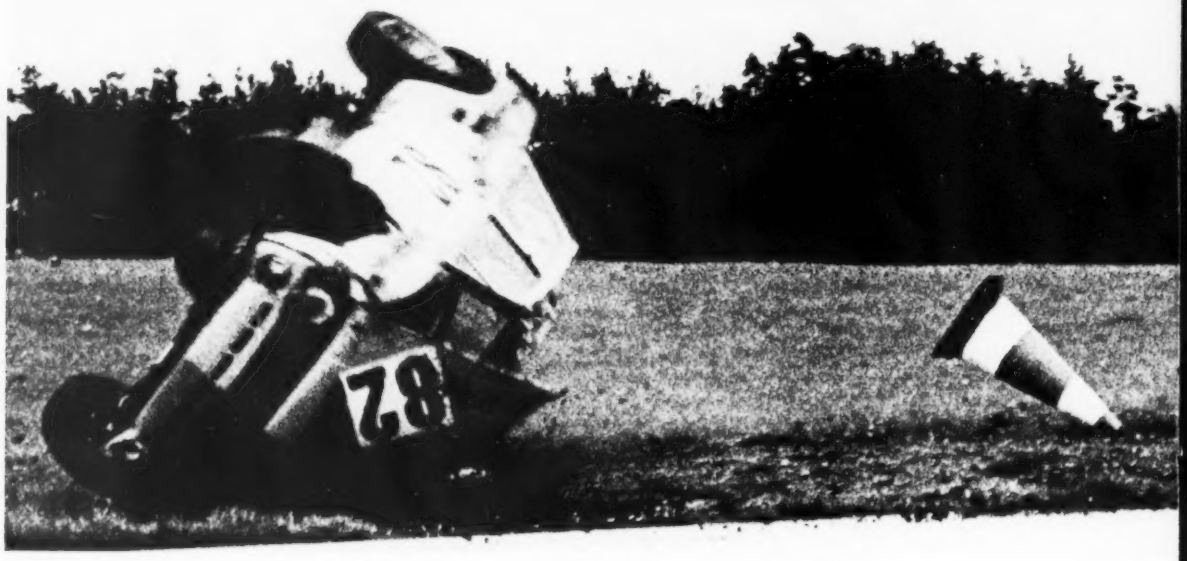


The instant before the drop of the starter's flag is a tense moment, as each driver revs his racer's engine and feathers the clutch. Starting field for each of the 14 races averaged 35 entries.

(Photo by Cliff Mobley)

1973

by Sgt Don Maggio



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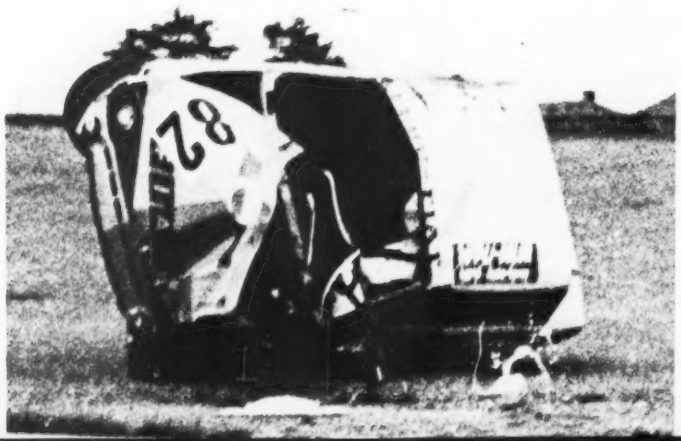
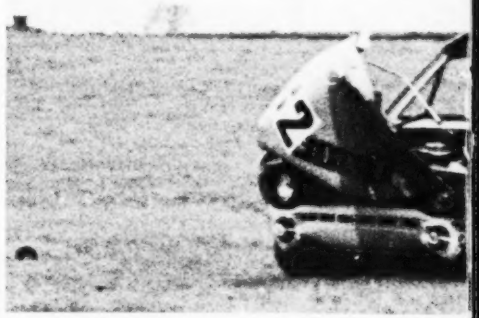
FLUGPLATZRENNEN 1973

this race would be plagued by bad weather as it has been for the past four years. But, by midmorning, the track dried and, with the exception of winds gusting to 30 miles per hour, the foul weather subsided. This left good racing conditions for the rest of the weekend.

(counterclockwise from top, right)
If ever there was proof positive of the value of safety precautions, this is it! In this remarkable series of photos by Dave Linkhalter, a Fiat misses a sharp turn and completes a spectacular flipover. In the first photo the Fiat starts its trip, while a Formula racer to the right is involved in a spinout. The little Fiat then proceeds through a very destructive rollover to eventually end up resting right side up. Then the amazing thing happens; the driver steps out unhurt! How did he do it? Protected by multi-point safety harness, roll cage, full-coverage helmet, and Nomex flame-resistant coveralls, he had a lot going for him, including a bit of luck.





Best finish by an American entry was Steve Farnsworth's second place in the Formula Ford competition. Fifteen Americans drove this event, including the husband and wife team of Walt and Ann Wurtzbach. Wurtzbach, an Air Force major stationed near Sembach, had high hopes going into this race after placing fourth in the time trials, one second off the leader's pace. He ran second early in the race the following day, but was troubled by a sticking throttle. He eventually lost control of his yellow racer and hit a course marker. The collision cracked the bottom of his car, forcing him to withdraw. His wife finished last, but the undaunted couple continue to compete on the European circuit for the American Express Cup.

BEHIND THE SCENES

Safety was the watch-word for the two days of racing. Seventeen spotter stations were strategically placed around the 5.6 kilometer course which was approved before the races by the Automobile Club von Deutschland (AVD), as well as the Sembach Air Base Ground Safety Office. AVD sanctions all European circuit races which count toward championship points for German drivers.

The Kaiserslautern Rally and Touring Association (KRATA), which assisted in race setup and details, supplied most of the flagmen, spotters, and course workers. Their job was to push stalled cars off the track and keep the course clear of debris. Each station was in visual and radio contact with the adjacent stations. Firemen and medics manned the stations in case of an emergency. The value of this network of spotters was realized when a Fiat, driven by Otto Ferres, became airborne and flipped coming into a sharp turn off one of Europe's longest straightaways. Ferres escaped injury *only* because he and his vehicle were well prepared.

All entries were required to pass a safety inspection prior to running in the time trials. Each car had to be equipped with a roll bar, a full racing harness, an outside engine kill switch, and a fire extinguisher. Additionally, all drivers had to wear Nomex racing suits and underwear along with leather gloves and approved crash helmets.

Another safety feature, the Rennswagen (fire wagon) turned out to be one of the event's biggest crowd-pleasers. The Rennswagen is a bright orange Porsche Carrera specially designed and prepared for racing.

The Carrera's job was to stay behind the starting field of each race and follow the pack for the first two laps. In event of an accident or collision, the heavily horse-powered fire wagon would be on the scene almost immediately with its precious cargo of tools, fire-fighting equipment, first-aid gear, and a doctor—the speedy Porsche's ever-present passenger.

To the spectators delight, the Rennswagen, driven by Herbert Linge, could sometimes be seen holding back even when it was following some of the fastest cars on the track. To fulfill its purpose, however, the Rennswagen had to stay behind the last car in the field. This innovative auto, and four others like it are based at Hockenheim Raceway near Heidelberg, Germany. They have also been used at Nurburgring, home of the German Grand Prix.

The entire weekend of racing was free of injury. Damage to cars was also very minor in most cases, but according to Ben Bogy, race coordinator, competing drivers lodged six protests contesting the legality of certain cars. In such cases, the cars protested must undergo a rigid class inspection to determine if the car meets the technical restrictions of its class. Once a driver takes his car on the track, he guarantees his car's legality; therefore, it is subject to inspection at any time. However, the driver making the protest must pay for the cost of the inspection, if the inspectors declare the car legal.

The main incentive for the drivers were championship points; prize money was secondary. Cash prizes varied from 260 Deutsche Marks for the winners in some classes, to 20 Deutsche Marks for 10th place finishers. The entry fee was 120 Deutsche Marks.

Race officials also allowed new drivers to compete as apprentices. Anyone with a regular driver's license could do this in order to accumulate yearly points toward a qualifying license. After earning the required number of points, an apprentice can become a full-fledged licensed racing driver for a prescribed fee. It usually takes about one year for an apprentice to accumulate the necessary points.

Flugplatzrennen may well have been the highlight of the local season,

continued

A driver tucks in his Nomex flame-retarding face shield before a race. All drivers must wear flame-protective clothing, leather gloves, and approved helmets when racing.
(Photo by Cliff Mobley)

A distaff racer checks the engine oil in her Formula Ford before an event. This sort of care pays off.
(Photo by Cliff Mobley)

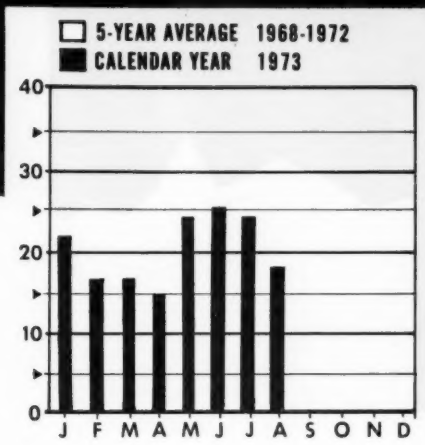
continued

FLUGPLATZRENNEN 1973

but auto racing is not a one-shot affair at Sembach. The flight line also hosts a full season of drag racing under the auspices of the Sembach Automotive Timing Association (SATA). The dragsters started running in early April and will continue every other weekend through late October. This schedule is held in conjunction with a similar program on alternate weekends at nearby Hanau, Germany, under the guidance of the Hanau Automotive Racing Association (HARA). Micro midget racing is also featured at Sembach. The end result is a safe, non-stop, high-speed racing program that gives the track dust little chance to settle. •

Some of the cars entered were spanking new, and in some cases, the fiberglass bodies were not bolted down to the frames until minutes before the beginning of the Time trials.
(Photo by Don Maggio)

It may have been a lonely day for some of the course workers, but since there were no injuries, their efforts more than paid off.
(Photo by Cliff Mobley)



TOTAL FATALITIES as of 31 AUG :

CY 1973: 162

5-YEAR AVERAGE: 224

A monthly recap of selected USAF accidents—presented solely in the hope some will benefit from the unfortunate experiences of others

HOW GOES IT?

A PINT OF RUM

Rank: Sgt **Type vehicle:** 1969 Chevrolet

The sergeant consumed a pint of rum and one beer while driving. He then lost control of his car while attempting to negotiate an S-curve on a dry road at 2030. The car rolled down a 100-foot embankment and struck a tree.

The sergeant was killed and his airman passenger suffered a broken neck, but survived. The sergeant's blood alcohol level was 0.17 percent at the time of the accident. Seat belts were installed, but not used.

Probable cause:

Failure to negotiate curve.

Probable contributing factors:

Speed; severe alcohol impairment; nonuse of seat belts.

FATAL PICNIC

Rank: SSgt **Type vehicle:** 1970 Dodge pickup truck

The sergeant drank beer at a squadron picnic from 1000 to 2200. He then drove to a nearby bar where he continued to drink beer until 0200. When he departed for his on-base quarters, visibility was limited by fog.

On the way home, the sergeant's truck struck an on-base utility pole. Eight feet of skid marks indicated hard braking before impact. The sergeant drove away without reporting the accident, and went to bed at 0230.

The next day he died of internal injuries suffered when his body struck the lower rim of the steering wheel at the time of the accident. Installed seat belts were not used.

Probable cause:

Loss of vehicle control.

Probable contributing factors:

Intoxication; nonuse of seat belt; fog; reduced visibility.

RAIN, SPEED, AND ALCOHOL

Rank: SSgt **Type vehicle:** 1968 Plymouth 2-door

The morning after a normal duty tour, the sergeant arose at 0830. Following breakfast he and a civilian friend played cards while having several drinks. About 1300 they left for the friend's apartment.

It was raining heavily and the road was slippery as the sergeant attempted to pass a slower-moving car. The rear wheels of the Plymouth broke traction and the sergeant lost control. The car spun and went off the road on the left side, striking the guard rail before rolling down an embankment and coming to rest. The sergeant was ejected and died of multiple injuries. The civilian passenger suffered minor injuries.

Seat belts and shoulder harnesses were installed, but not in use. Investigators said use of the restraints would have saved the sergeant's life.

Probable cause:

Failure to regain control from a skid.

Probable contributing factors:

Limited visibility (rain); slippery road; alcohol.

TOO FAST FOR CONDITIONS

Ranks: Sgt, Amn, Amn **Type vehicle:** 1971 MGB convertible

After partying from 2100 until 0100, the airmen returned to the base. Later, they headed north on a dry road at high speed and were chased by a police car.

The MGB angled left at a "Y" intersection and impacted the left curb about 150 feet past the "Y". The car veered right, crossed both lanes, and struck the right curb 300 feet down the road. The sports car then went into a sideways skid, and eventually flipped over and rolled for 130 feet. The three occupants were ejected and killed.

Seat belts were installed for the two front seat passengers but were not in use.

Probable cause:

Loss of control at an intersection.

Probable contributing factors:

Use of alcohol; nonuse of seat belts which might have retained driver in position behind the wheel, enabling him to regain control of the vehicle.

FATIGUE

Rank: Sgt **Type vehicle:** 1969 Honda 750cc motorcycle

The sergeant who had only five hours of rest during the preceding 48 hours was riding at 0715 on a dry road in clear weather. He collided head-on with a sedan and died of the resulting injuries.

Investigation showed the shoulderless road had a two-inch drop off at the sides. The sedan's driver, a pro truck driver, said he always drove near the centerline to avoid the drop-off hazard. He saw the motorcycle drift into his lane, but was unable to avoid it.

Probable cause:

Motorcylist drifted into path of auto.

Probable contributing factors:

Sun may have partially blinded cyclist; bubble visor may have caused vision distortion, making traffic lanes difficult to recognize; fatigue.

13
KELLEHER

THE MOTORCYCLIST

Who does he think he is?

It's 0735. You're tooling your sedan down the road about 5 mph under the speed limit. From the inside lane you catch a flash of light to your right. A glance reveals a white-helmeted head with a darkened face shield–A MOTORCYCLIST!

It's 1430 on a beautiful Sunday afternoon. You're cruising along a rural road in your air conditioned road-boat. You and some friends are going nowhere in particular—just enjoying the country scenery. Ahead of you in the other lane you notice a bright spot of light in the heat waves rising from the road. You decide not to pass the slower pickup truck in your lane. In a few seconds, the spot of light materializes into a motorcycle headlight. On the cycle are two helmeted people—a guy and his girl. What are they doing there? Enjoying a Sunday afternoon ride, just like you.

by LCDR L. A. JOHNSON
Naval Safety Center

What's he doing there? He's probably on his way to work just like you; except he's on two wheels instead of wrapped up in 3500 pounds of steel.

You are late for an appointment—driving a little faster than normal on a two-lane road. You realize you are overtaking a motorcycle traveling about four feet to the right of the center line. To pass him, you must move all the way over into the left lane. Who does he think he is, taking up the whole road like that? *He is a licensed operator, driving a licensed motor vehicle—just like you. More importantly, he's a human being—just like you.*

Let's face it, motorcyclists have gained an unnecessarily unsavory reputation. They have come to be associated with the more restless and reckless elements of society, partially as a result of media publicity.

Some might even claim motorcycle riders are exhibitionists or nonconformists. But, as a driver, can you tell me that in a traffic jam you didn't want to swing out on the shoulder and zip past that long line of cars, or that you didn't at least once try to be a freeway version of A. J. Foyt or Mario Andretti?

continued

continued

THE MOTORCYCLIST

The kind of guy who cuts in and out of traffic on a cycle would probably do the same thing in a car—it's just more tempting on a bike. Anyway, if a motorcycle "cuts in" on a car, the car's driver remembers it every time he sees a "bike." But if it was another car, he'd forget it in five minutes because he's used to cars on the road.

It's hard to deny that people who ride motorcycles, like people who drive cars, include the whole spectrum of personalities—from cautious to reckless, from courteous to selfish, and from attentive to numb.

A motorcyclist is also set apart by the clothes he wears (or should wear). The "black leather jacket and motorcycle boots," popularized in song in the 50s, have a distinct purpose. Warmth, yes. But much more. Leather is protective hide. When a rider has to "lay a bike down," it's better to leave leather from the jacket on the pavement than his skin.

The helmet and face shield are also for protection. A cyclist leaving his helmet and face shield behind would be about the same as a car driver driving minus the body and windshield.

This line of discussion could go on and on, but what is more important is to be aware that experienced, successful motorcyclists have some defensive riding techniques all their own. Knowing about them, whether you drive a car or a bike, can make you a better "road man." After all, highway survival depends an awful lot on understanding the other guy. This means not only anticipating his moves, but also showing him consideration.

The next time you're driving, glance at the road surface. Right down the middle is a big grease streak left by cars and trucks. You will also notice two clean strips about three or four feet from each edge of the lane. That's where your tires are running, and that's where the guy on the "motor" is going to put his rubber for better traction and braking.

He will ride in the left track most of the time because that's where he can best be seen by the drivers in front of him—in their rearview AND left side mirrors. If you have to make a full lane change to pass the cyclist, just remember that he's not hogging the road. He's riding in that safe track. If he were driving a car or truck, you would have to pass wide. Besides, if you can't make a full lane change, maybe you should not be passing.

Did you ever notice a motorcyclist with his headlight on during the day? You have? That's great—you were supposed to notice. That machine is nowhere the size of a car, and the rider wants to be seen so you won't do thoughtless things—like making a left turn in front of him.

Even with a decorated helmet and super-reflective tape on his machine and clothes, you can't call him an exhibitionist; just a smart cycle rider.

A motorcyclist concentrates more on the road because he must. He doesn't have distractions like the radio, kids, or a dropped cigarette lighter. Remember, a motorcylist is less complacent. In any traffic situation he is continually looking (or should be) for an escape route from potential trouble. Give him the same room you would like to have yourself.

As long as a cycle is "up on two," the motorcyclist has more brakes for his weight than a car. He may have a safe stop "made" until you auger into him from the rear. Take it from me, motorcyclists make lousy hood ornaments.

A cycle can out-maneuver a car in many situations, within definite limits. Some riders take unfair or unjustified advantage of this maneuverability. As a result, they may get wiped out, or earn the warranted hate of car drivers.

The car driver, in turn, should realize the seriousness of playing around with cycles on the road. A driver following a car too closely can end up with only a bashed radiator. On the other hand, following a cycle too closely can easily wipe out a man. In a real "chips-are-down" tangle, the rider has a last resort—to lay the bike down and bail out—hoping he can roll or slide out of the traffic onto a shoulder or median. If you are too close—well, that's it.

There are people who ride motorcycles and those who would never get on one. The same goes for mountain climbers, sky divers, and steeplejacks. The world is made up of all kinds of human beings.

So, who does that guy on a motorcycle think he is? *Just another licensed operator on a licensed vehicle, exercising his privilege to use the public roads. According to law, he is entitled to the same size piece of highway as you in a car. He comes in all sizes, shapes, and attitudes. And he wants to live a long, happy life just like you do. When he violates a law, he's eventually going to pay the penalty.*

I'll make a deal with you. When I'm riding my cycle, I'll give you the courtesy and consideration that you are due. How about doing the same for me? ●

WHAT SHOULD YOU DO?

You're running 55 miles on hour on a two-lane country highway. It's cold and getting colder but the moisture on the road has not turned to ice. Without warning you come upon a bridge, and there's a thin film of ice covering the entire bridge. What should you do?

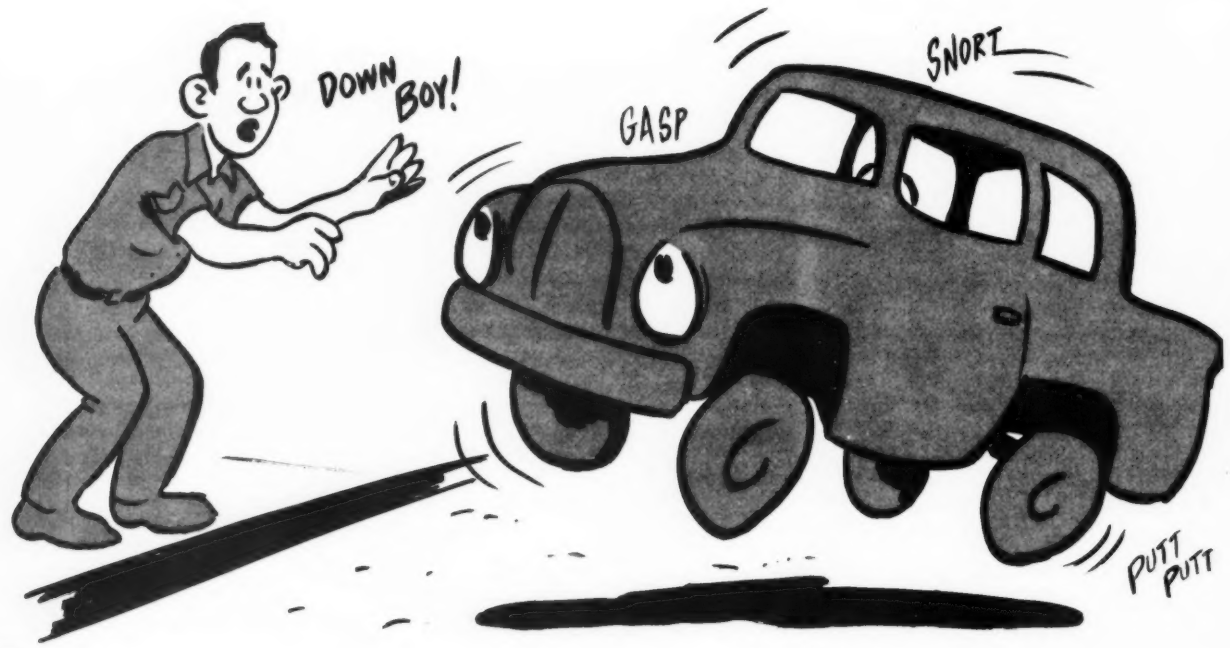
A. Ease off the accelerator, keep wheels straight and coast across bridge.

B. Soft-brake, hold wheel straight and steer across.

THE BACK-YARD MECHANIC PART X

Dieseling

How to keep your car from running away with itself



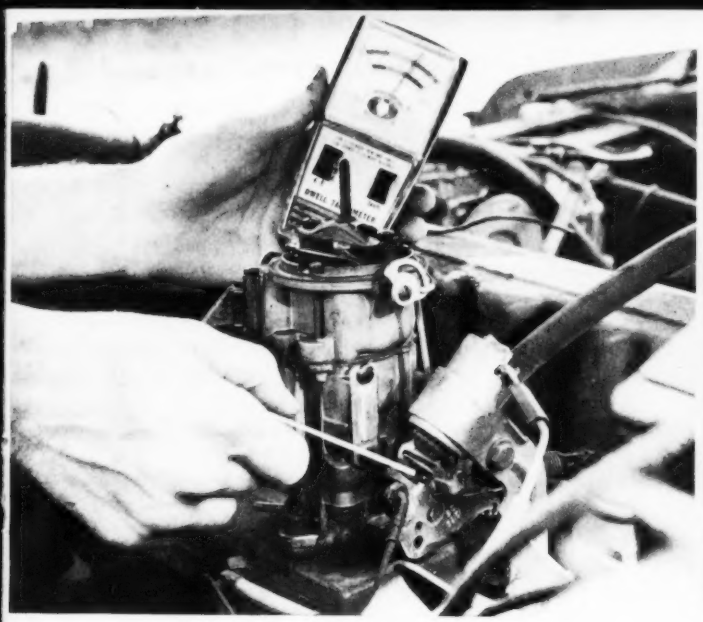
It's probably no surprise to most of you if your car runs for a few seconds after you switch off the ignition. "Dieseling," or "run-on" as this condition is called, is rather common—especially with 1968 and newer American cars.

Dieseling generally isn't harmful to the engine, but in most cases it is an indication that something isn't quite right. And, if you've ever pulled into a parking lot and had your car continue to run for endless seconds after switch-off—gasping, clattering, and shaking itself violently to a stop, you know this can be frightening, as well as embarrasing. So, it's an all-round good idea to have a car that stops when you shut it off.

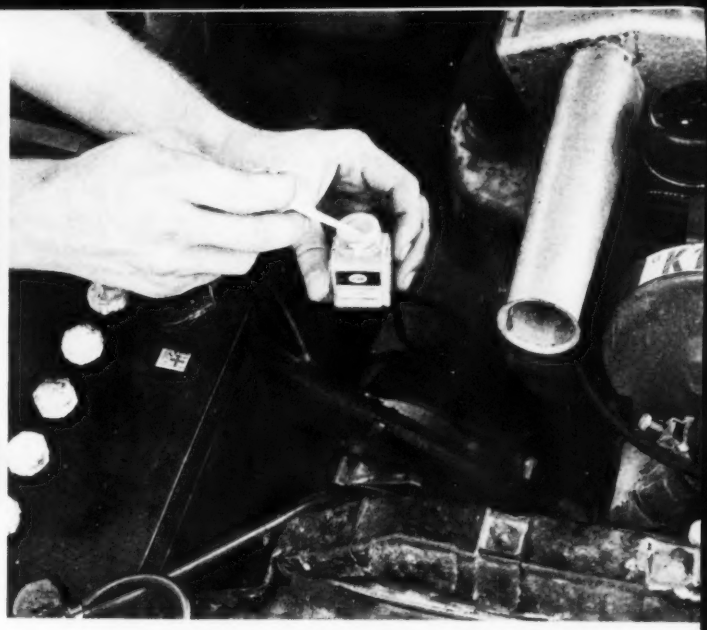
THE CAUSES

Dieseling occurs when heat ignites unburned fuel in the engine's combustion chambers after the ignition is turned off. Most engines have some excess gas in the cylinder at switch-off. However, since there isn't any ignition spark after the engine is switched off, dieseling doesn't occur unless there is sufficient heat to ignite the fuel. This is why your car is more likely to diesel on a hot day, or after it has been run extra hard.

The amount of fuel in the engine at switch-off also affects dieseling—with more fuel, there is a greater chance of ignition. Cars with automatic transmissions are prone to dieseling for this reason. Since an auto-



Correct idle speed is critical in controlling emissions and dieseling. Engine idle should be set precisely to the manufacturer's specifications using a tachometer and following recommended procedures. Hot idle is set at the anti-dieseling solenoid on engines so equipped—at the throttle linkage on most others.



Ignition timing must be "right on" for today's emission-controlled engines to run properly, and not diesel. Marking the proper timing notches with fluorescent and/or white enamel paint makes them more visible. This will facilitate more accurate settings—especially when using a weak-flashing neon bulb timing light.

matic is taken out of gear and placed in neutral or "Park" before the engine is turned off, the idle speed increases, allowing an extra amount of gas to enter the engine at switch-off.

NEW CARS

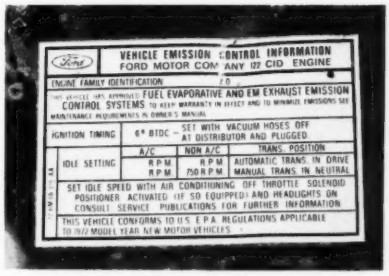
Post '68 model cars are more susceptible to dieseling than older cars because of higher idle speeds and engine operating temperatures used for controlling emissions.

Other emission control-related factors which contribute to dieseling in newer cars include the use of leaner, hotter-burning fuel mixtures, as well as later ignition timing settings. Retarding the timing on current engines is critical in reducing emissions. However, because the spark is occurring later in the combustion cycle, there is less time for heat escape—therefore, more combustion heat buildup. Retarded timing settings also allow the use of lower octane fuels which burn hotter and contribute to dieseling.

SOLUTIONS?

Because of these engine tune factors, the first thing many people do if their car starts dieseling is switch to a higher octane fuel and/or advance the timing. Higher octane fuel

A sticker inside the engine compartment of all 1968 and newer cars gives the vital timing and idle specifications.


VEHICLE EMISSION CONTROL INFORMATION
FORD MOTOR COMPANY 122 CID ENGINE
ENGINE FAMILY IDENTIFICATION
FUEL EVAPORATIVE AND EM EXHAUST EMISSION CONTROL SYSTEMS
IGNITION TIMING
6° BTDC – SET WITH VACUUM HOSES OFF AT DISTRIBUTOR AND PLUGGED
A/C
NON A/C
TRANS. POSITION
IDLE SETTING
RPM
RPM
750 RPM
AUTOMATIC TRANS. IN DRIVE
MANUAL TRANS. IN NEUTRAL
SET IDLE SPEED WITH AIR CONDITIONING OFF THROTTLE SOLENOID POSITIONER ACTIVATED (IF SO EQUIPPED) AND HEADLIGHTS ON
CONSULT SERVICE PUBLICATIONS FOR FURTHER INFORMATION
THIS VEHICLE CONFORMS TO U.S. E.P.A. REGULATIONS APPLICABLE TO 1972 MODEL YEAR NEW MOTOR VEHICLES

may eliminate dieseling since it burns cooler and reduces the engine's operating temperature slightly. However, this isn't the solution to the problem, and it may damage an engine designed to run on sub-regular fuel.

Advancing the timing, richening the fuel mixture, or decreasing the idle speed are other methods some people use in an attempt to control dieseling. But, doing any of these things merely defeats the necessary anti-pollution measures designed into your engine. And altering any of these adjustments from factory specifications is usually illegal!

SOLUTIONS!!!

So, what can you do if your car starts dieseling? Well, despite possible frequent evidence to the con-

continued

Aim the light carefully at the timing pointer and sight directly down the middle of the light to avoid error when aligning the timing marks.

trary, your car's engine is designed not to run on after you switch it off. If it does, it's probably because it needs a tuneup.

But, let's say you just put a good tune on the engine, and it's still reluctant to quit when it should. Then, the first thing to do is make sure the idle speed and ignition timing are set exactly to the manufacturer's specs. Misadjustment of these critical settings is very frequently the cause of dieseling.

ANTI-DIESELING DEVICES

If all essential adjustments check out, and the engine is still a bit overanxious at switch-off, you'd better check into the car's anti-dieseling device.

In 1969, after engine tune modifications on the '68 models made dieseling common, the manufacturers began installing special anti-dieseling devices. One of these devices is used on most cars built after 1969—especially on models with larger engines and/or automatic transmissions. Your manual shows what type of device your car uses, if it is so equipped.

SOLENOID

The most common of these devices is the anti-dieseling solenoid; called a throttle modulator on Ford products. The solenoid is a mechanical device that mounts on the carburetor and controls dieseling by allowing the throttle plate to close completely when the ignition is turned off. This prevents combustible air and fuel from entering the cylinders after switch-off.

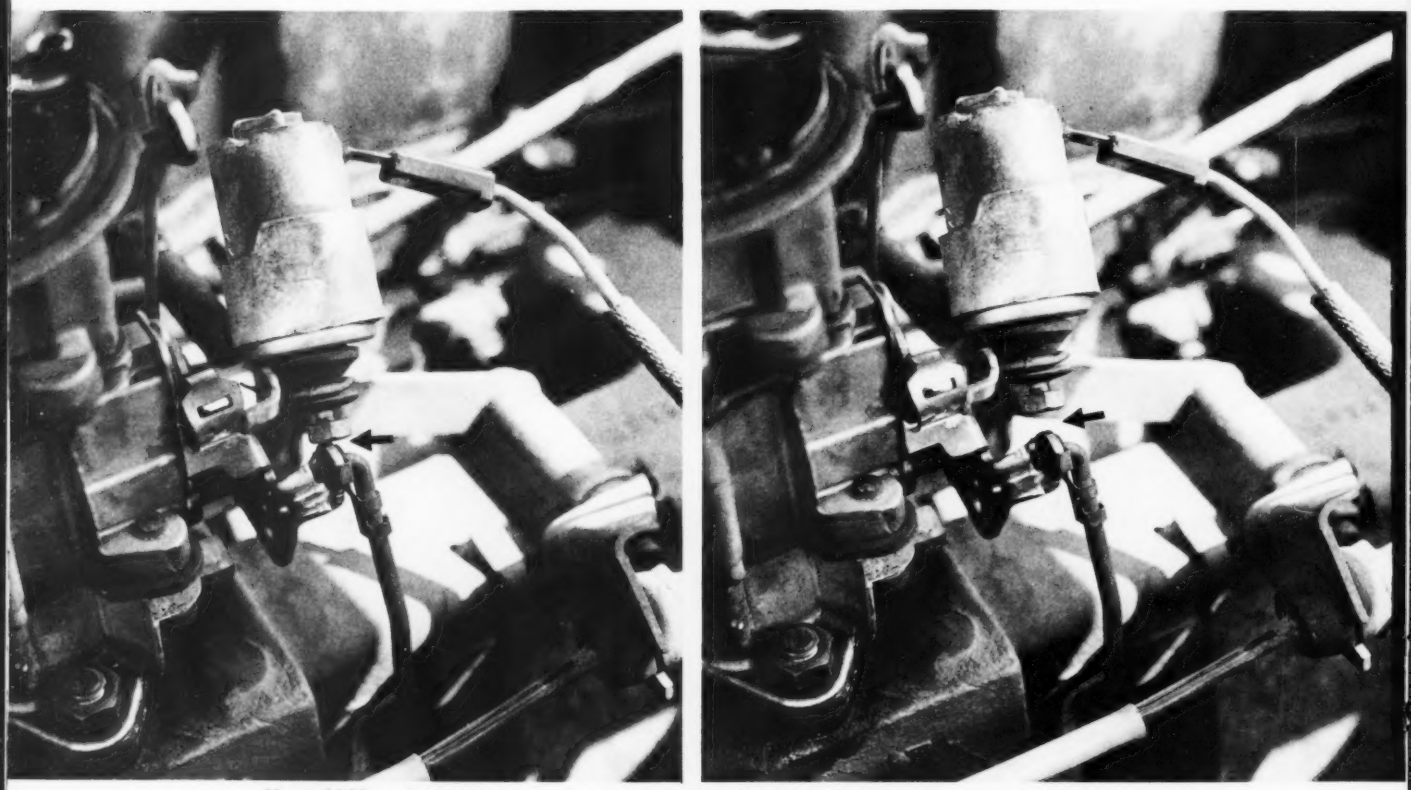
The solenoid's main component is a special plunger. When the engine is warm and off the fast-idle cam, the plunger extends against the throttle linkage or throttle-stop screw and holds the throttle plate open to maintain engine idle. When the ignition is switched off, the plunger retracts allowing the throttle plate to close off the air to the cylinders.

OPERATION

The solenoid can be quickly and easily checked for proper operation. Remove the air cleaner assembly and locate the solenoid at the carburetor. With the engine warmed to operating temperature and the idle properly set, have a friend hold down the accelerator (with the engine off) so the throttle linkage is retracted from the solenoid.

Then, simply watch the action of the solenoid's plunger as your friend switches the ignition on—then off. If the plunger extends with the ignition on—then retracts when the ignition is switched off, it's operating correctly.

If the plunger fails to move, disconnect the wire running to it (see picture). With the ignition on, but the engine not running, touch the wire to a metal "ground." If the wire sparks, the solenoid is faulty. Check



Many 1969 and newer cars use special anti-dieseling devices. The most common is the anti-dieseling solenoid. Solenoids on all cars are essentially the same. With the engine at operating temperature, the solenoid plunger extends against the throttle linkage or throttle-stop screw to maintain engine idle. The plunger should retract when the ignition is shut off. If it doesn't, and the wire to the solenoid is electrically hot, the solenoid must be replaced.

your manual for proper solenoid replacement and adjustment procedures on your car. If the wire doesn't spark, it is probably disconnected at the wiring harness on the firewall, or at the ignition switch. The wire could also be shorted out. Trace the wire back from the solenoid until you locate the problem.

ADJUSTMENT

With the engine idling normally, simply pull the wire loose at the solenoid to check the solenoid's adjustment. Idle speed should drop, and preferably the engine should stall or die. If it does, the solenoid is adjusted reasonably close to specs.

If engine speed doesn't drop off considerably when the wire is removed, the solenoid needs adjustment. Adjusting the solenoid on most cars requires simply turning the plunger adjustment nut and the throttle-stop screw until the engine idles properly, and stalls when the plunger retracts. Check your manual for the correct adjustment procedure on your car.

AC SYSTEM

On many newer cars with factory-installed air conditioning, the anti-dieseling solenoid has been replaced by a simple relay system that engages the air conditioner compressor when the ignition is switched off. This puts the engine under extra load, causing it to burn all of the fuel in the combustion chambers as the engine is turned off—helping to eliminate dieseling.

This type of anti-dieseling system can be very easily checked for proper operation. With the engine running and all air conditioner controls in the "off" position, observe the air conditioner compressor's clutch as a friend switches off the engine. The clutch should engage for several seconds, slowing the engine.

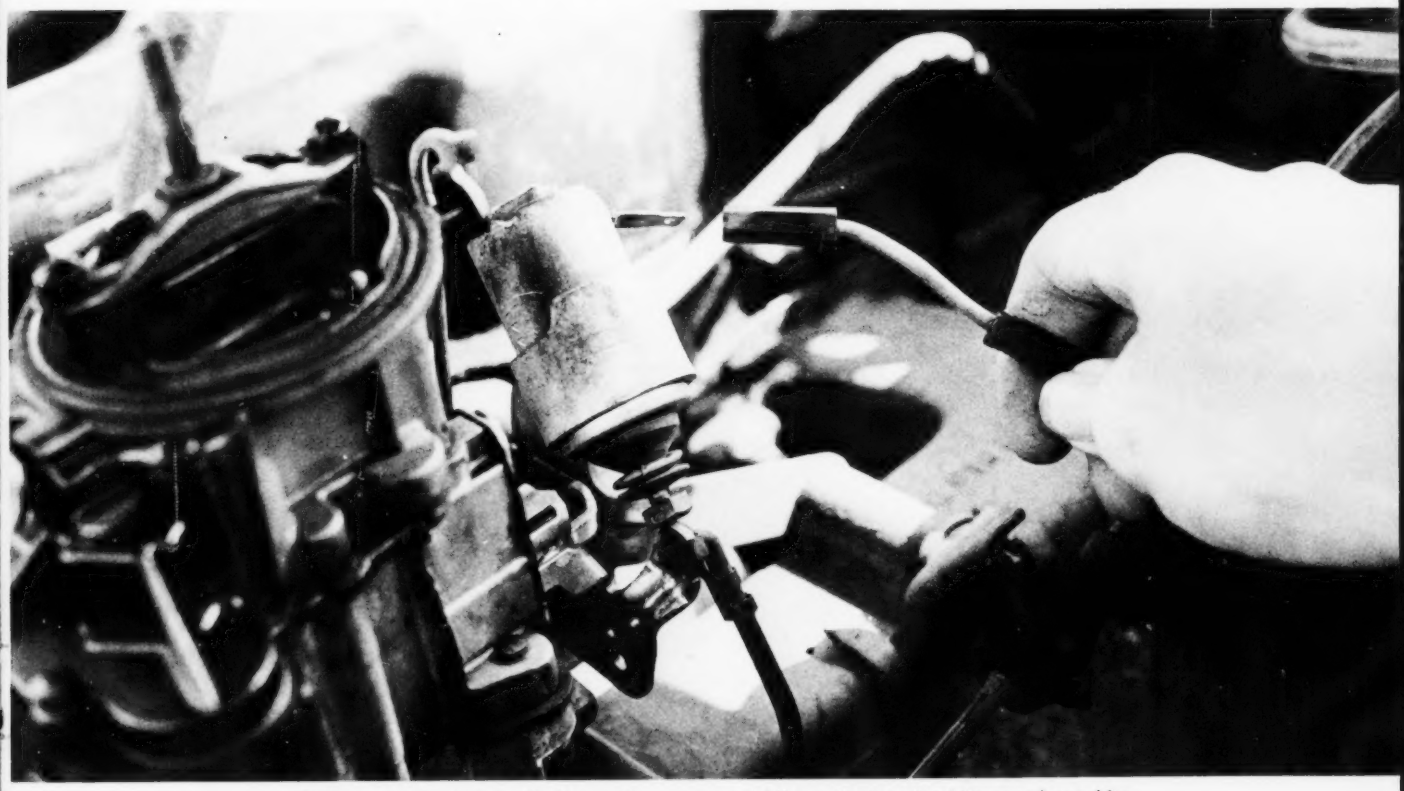
If the clutch doesn't engage when the ignition is switched off, look for a loose connection at the compressor or anti-dieseling relay. The relay is usually located under the dash—but check your manual to be sure. If all connections are tight, if the relay is properly grounded, and if the air conditioner operates normally, the relay is faulty.

OTHER CAUSES

Dieseling is nearly always the result of an untuned engine and/or inoperable or improperly adjusted anti-dieseling device.* However, there are a few items which may go unchecked in a regular tuneup that can contribute to or cause dieseling. The manifold heat control valve (heat riser) and the throttle linkage are two of these items.

If the heat riser valve sticks in the "heat" position, the fuel mixture will be overheated, resulting in dieseling and other performance problems. The valve should be checked for proper

** On some 1970-71 Ford models, dieseling may occur because of feedback through the alternator warning light circuit. A diode kit is available from Ford to cure this problem. A failure of this diode may also cause dieseling.*



Pulling the wire loose with the engine warm and idling will drop the idle speed considerably, and even stall the engine if the solenoid is properly adjusted. If pulling the wire doesn't affect idle speed, the solenoid needs adjustment.

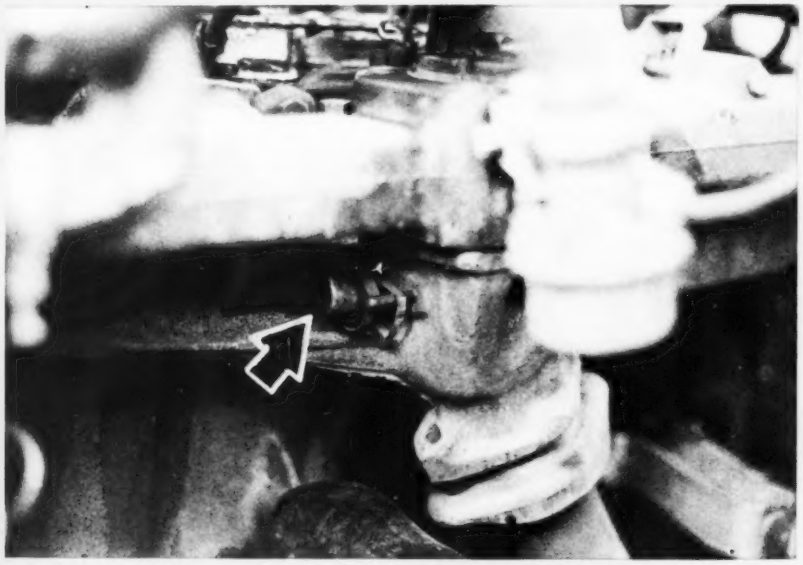
operation and doused regularly with solvent to keep it operating freely. (See "The Back-Yard Mechanic," Aug '73 DRIVER).

A dirty throttle linkage can also contribute to dieseling by holding the throttle plate open slightly when the engine is shut off. The linkage should be kept clean and checked periodically for free operation.

Even if you have everything adjusted "right on," however, occasional dieseling is considered normal on today's emission-controlled engines—especially when they have been run hard on a hot day. But there are a couple of final things you can do to give your engine a break—especially when it's slightly overheated and you think it might want to keep running after you tell it to stop.

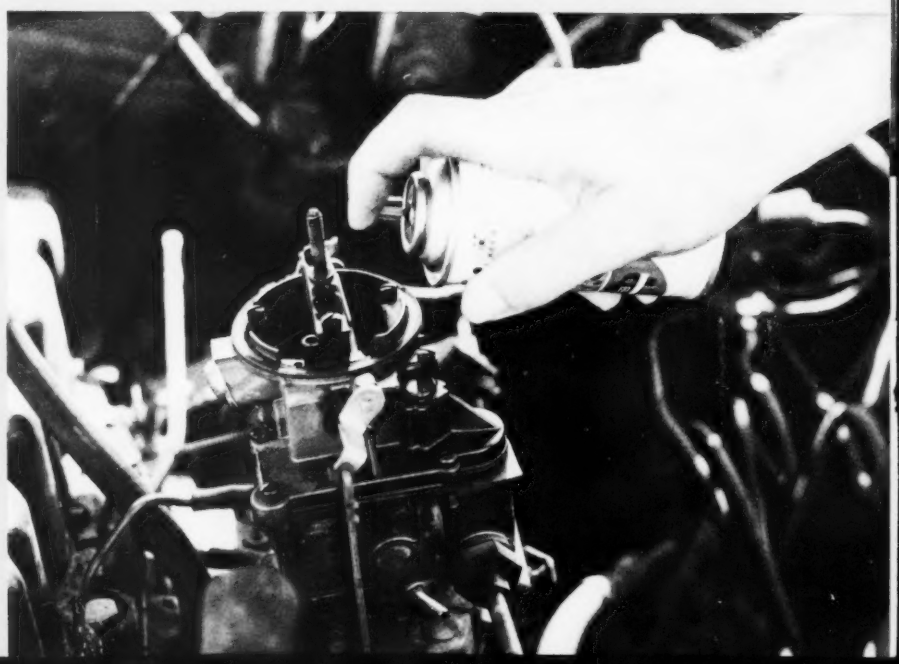
First, always let the engine idle normally for a few seconds before shutting it off. Revving the engine just as you switch it off not only contributes to dieseling, but is also harmful to the engine. The excess fuel which enters the engine dilutes the oil in the cylinders, causing inferior lubrication when the engine is restarted.

With an automatic transmission, it's also sometimes desirable to leave the selector in "Drive" and your foot on the brake when you shut off the engine. This keeps the engine under load, and the idle speed from increasing and sending excess gas to the cylinders at switch-off. •



A stuck heat riser or throttle linkage can cause or contribute to dieseling. Check both mechanisms regularly for proper operation. Frequent dousing with solvent will help keep them working freely.

It was once thought carbon buildup in the engine was the main cause of dieseling. With today's engines this generally isn't the cause. However, regular cleaning of the carburetor and combustion chambers with areosal cleaner-decarbonizer will help keep your engine running right, as well as deter dieseling.



continued from page 9

TIRE SPECIAL

In this case, you will have to compute the correct inflation pressure for carrying the specific load. To do this, simply add the vehicle's weight (shown in your owner's manual) to the weight being carried, including the passenger weight. Then check the total weight on the inflation chart (Fig. 2) to determine the correct inflation levels for your car's tires to safely accommodate the load. A tire dealer can also give you the correct tire pressures for a specified load in your vehicle. Finally, it's essential to distribute any additional weight as evenly as possible in the vehicle.

INSPECTIONS

Along with maintaining correct inflation pressures, regular tire inspections are an essential part of tire maintenance. Tires should be replaced, and *must* be in many states, when the tread wear indicators (smooth bars across the tread) are showing, or when there is less than 1/16-inch of tread in any two adjacent grooves.

You should check regularly for fabric breaks, cuts, or any other tire damage. Also, it's important to be alert for unusual wear caused by misalignment of the front end, out-of-balance wheels, weak shocks, or improperly inflated tires.* Many tire shops now offer free, regular inspection and rotation when you buy new tires. Even if your shop offers this valuable service, it's still in your best interest to get in the habit of checking your tires' inflation pressure and general condition at least every two weeks. The following list of tire tips will help you get at least a warranty's worth of safe, happy tire miles. ●

* *"Tire Care Special," Aug '71 DRIVER, contains pictures showing unusual tire wear patterns and their causes.*

TIRE TIPS

- Buy a good tire pressure gage and use it regularly. Service station pump gages may be off from 2 to 15 psi.

- Check inflation with the tires cold—after they have been sitting at least 3 hours—not warm or hot after driving. Hot tires build up an extra 4 to 8 pounds of pressure.

- For steady, high-speed driving add 4 to 5 psi to the recommended air pressure. **Never** inflate above the tire's maximum pressure.

- If one tire continues to need air, it may have a leak, bent rim, cracked valve stem or a faulty valve core. Refill it to the right pressure but check it again after a few hours.

- When you check tire pressure, also check the spare. Nothing—not even running out of gas—is as foolish as a $50 tow charge because your spare is flat.

- Vacation trips usually mean heavy loads. Make sure the weight is distributed as evenly as possible in the vehicle. Be sure to adjust the tire pressure to accommodate the extra load.

- Form the habit of looking at your tires—the tread surface, shoulders, and sidewalls.

- Check front-end alignment frequently, especially if you notice uneven tread wear or "pulling" to one side while driving. Back roads or a few solid bumps on any surface can throw off the alignment.

- If you notice abnormal tread wear or seem to be getting a bad ride, this is a good time to have your tires balanced.

- Check the tires regularly for wear, and remove any debris such as embedded glass or stones.

- Turning corners next to the curb, or parking too close to the curb, can be murder on your tires. When you feel the curb while parking, stop. Try again.

- If you buy any new tires, the law requires the seller to register them if they were made after 22 May 1971. If a tire recall is necessary, the manufacturer will notify you directly.

- When you buy new tires, have the old valve stems carefully inspected. Valve stems can crack, become brittle, and wear out. A few cents for a new valve stem is a very good investment.

- New tires should always be given a proper break-in—limit speed to 60 mph for the first 50 to 100 miles. This allows the tire to slowly adjust to the heat and stress of driving. Breaking-in radials is especially critical since they may exhibit inferior traction until their special rubber compounds adjust to heat.

- For a variety of safety reasons, if only two new tires are purchased, they should be replaced on the rear axle—not the front as commonly believed.

- Driving on snow tires for any prolonged period in warm weather is poor economy. Abnormally high heat buildup in these thicker tires can wear down the tread faster than in regular tires. It may also cause sudden failure.

BACKFIRE

OOPS!

The caption under the sailboat versus ship picture on page 19 of the August '73 DRIVER is in error. It is true that a "steam vessel" is normally required to keep out of the way of a "sailing vessel." However, both International and Inland Rules of the Road state in identical language that a sailing vessel does not have "the right to hamper, in a narrow channel, the safe passage of a steam vessel which can only navigate inside that channel." Thus, the sailboat pictured would be wrong as well as stupid to attempt to pass ahead of the ship.

Lt William D. Stewart, USN
New London Test and Eval Det
New London, Conn 06320

You are so right, Lieutenant. Another reader sent in further information on this subject of interest to our boaters. Mr. Cookley, an Army Safety Officer, wrote, "A sailing vessel does not always have the right of way over a steam vessel. This applies, for example, when a steam vessel is broken down, when a steam vessel is made fast over a submerged object, or when a steam vessel is overtaken by a sailing vessel. Additionally, a steam fishing vessel has the right of way over a sailing vessel."

The DRIVER staff learned a lot from this error. Thank you, readers.

MORE COMMENTS, SAME ISSUE

My compliments to you and your staff on the July issue. I've noticed your publication seems to have a much better format than that of a year and a half ago. Variety has improved greatly, and the material is extremely pertinent to actual driving as opposed to a hypothesis of how it "should be."

Oh yes, for six years now I've been driving a two-wheel-drive vehicle with a short wheelbase and independent suspension. It, like the M151A1 Jeep, oversteers in turns, and its rear wheels like to "tuck in" during aerial exploration. Its cross-country handling abilities are underrated, and I wouldn't give it up for the world. It's a 1966 Volkswagen Beetle.

A1C Bob Krajicek
319th AMMS
Grand Forks, North Dakota

We greatly appreciated your comments about DRIVER'S format and content. Glad to hear you understand the oddities of the split-axle independent suspension.

CORAL SEA READERS

DRIVER magazine is distributed throughout the various departments and squadrons on the USS CORAL SEA. I think it's an excellent publication and one that seems to be read by officers and enlisted men alike. Hopefully the end result will be a group of people more conscious of safe driving.

Ensign James R. Kirkpatrick
Attack Squadron Ninety-Four
FPO San Francisco 96601

We hope so, Jim.

"BACKYARD" SUGGESTION

We of the 612th TAC Fighter Squadron want you to know we receive your magazine and appreciate the articles you print.

The "Backyard Mechanic" series is very helpful. It has more detailed info than a lot of tech mags on the market, and contains hints that aren't found anywhere else. I would like to make a suggestion. Why not perforate the pages in this series for the use of auto buffs throughout the Air Force?

SSgt Jim Price
P.O. Box 4477
APO New York 09283

Thanks for taking the time to let us know you and your squadron enjoy DRIVER. Your suggestion has merit; however, there's one problem. Air Force distribution of DRIVER is on a 1-to-13 basis (1 copy for every 13 people on active duty). The idea is to share the magazines as much as possible by passing them around. If we were to perforate certain pages so they could be torn out, it would ruin the magazine for the next person down the line. Also, your squadron orderly room, base safety office, and base library should be maintaining a file of DRIVER copies for reference.

"KEEP COOL" NOT SO HOT

As a do-it-yourselfer, I am an ardent reader of DRIVER. "Don't Blow Your Coolant," (Jun '73) contains a lot of very good and useful hints. However, I must take exception to your assertion that "keep cool" radiator additives really work. A national auto magazine conducted controlled tests on radiator additives, and found none to be effective in lowering temperatures of hot-running cars. Stay with the 50/50 mixture of water and anti-freeze.

Additives, whether in the gas tank, crankcase, or radiator are called "mouse milk" in the industry. Most are useless, and use of some of them could void the warranty on your car, as reported in CONSUMER REPORTS Jul '71.

Capt J. P. Cullen, USN
Atlantic Command Ops Ctl Ctr
Naval Station
Norfolk VA 23511

"Keep cool"-type products have an ethylene glycol base similar in content to antifreeze. In addition, they have wetting agents and a few other additives to help facilitate heat transfer to the radiator. For these reasons, it was once thought such products helped lower the operating temperature of all cooling systems in good mechanical condition. However, several recent studies have shown that these products are ineffective in lowering the temperature of a cooling system filled with a proper mixture of antifreeze and water. We now agree with the studies which concluded that these products may help in **some** *cases, but the most effective and economical method of keeping your car cool, is, as you state, "to stay with a 50/50 mixture of water and antifreeze."*

We do not agree with your total condemnation of additives, however. Many additive products designed for a certain purpose do the job well.

LETTERS TO THE EDITOR

RUMOR SHATTERING

I read your article in the June '73 issue entitled, "Ten Rumors Shattered." There is one more I would like you to shatter, if possible, to settle a disagreement.

My friend claims a narrow tire will have more traction on snow, sand, mud, or ice than a wide tire (same tread). He says a wide tire has more traction on the highway. I say the wider the tire, the more traction, regardless of the surface it is on. What do you say?

SSgt Dean Collins
20-A Foster Drive
Eglin AFB FL 32542

Our Goodyear contact supports our belief that a wider profile tire will give superior traction on nearly all surfaces. The wider the tire, the wider the "footprint."

But, there's a catch. A narrower tire may provide better traction on wet roads and wet ice because it has less tendency to hydroplane than a wide tire—especially if the tire is "extra wide," or well worn.

MORE RUMOR SHATTERING

My experience as a stock car and beach buggy driver leads me to believe the answer to question number one of your tire quiz is incorrect. Decreasing tire pressure actually increases the footprint, however, in this case, the friction coefficient is enhanced by increasing contact pressure (higher tire pressures). In addition, higher tire pressure helps stabilize the tread pattern, which improves traction in the snow.

I wear seat belts in my helicopter, stock car, and passenger car. But, I believe if someone would rather die than wear belts; it's his right.

Len Hinell, USCG
92-754 Nohona St
Eva Beach, Hawaii 96706

We agree with your basic points except for your comment, "decreasing tire pressure actually increases the footprint." According to the Tire Industry Safety Council, source of the "Ten Rumors" quiz, decreasing tire pressure creates a concave tread contact area, which reduces the actual footprint.

Concerning your freedom-of-choice argument for not wearing seat belts, we do not feel this is an individual freedom, as you suggest. There are numerous cases on record in which seat belts held a driver at the controls in a glancing blow, or other loss-of-control accident. By staying behind the wheel, the driver was given the opportunity to regain control and avoid involving (and perhaps wiping out) other motorists or pedestrians. Therefore, wearing seat belts is not solely a matter of individual freedom.

VAN GOUGH CYCLIST

Your article, "Sixty Feet of Texas Highway" (Jun '73) reminded me of a motorcycle accident I had in May '72.

I was home on a seventy-two hour liberty, and dropped by to see a friend who owns a bike. I asked him how it was running, and he offered to let me take it for a short spin. Of course, I jumped at the opportunity, even though all I had on were shorts, a thin knit shirt, a pair of sneakers, and no helmet.

As I was riding down a narrow back road, I waved to a friend working in his backyard. This has probably been the downfall of many a motorcyclist, especially the inexperienced one, like me. I lost control of the bike in some sand, went flying through the air, and ended up in the hospital with a concussion, shoulder separation, and some bad lacerations, including the loss of my right ear.

I was lucky not to have been more seriously hurt. But the point is, I could have avoided everything, just by riding more sensibly. My advice is, don't try anything fancy when riding, experienced or not. Your accident could be a lot worse than mine.

Hospitalman Donald R. St. Onge
Medical Department
USS DEWEY (DLG-14)
FPO New York 09501

A rough initiation to motorcycling, Donald. You are "right on" with your advice.

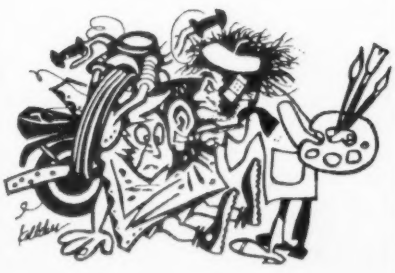
A lot of people don't seem to realize how dangerous motorcycling is for the inexperienced. Most cycle accidents occur in the first 60 days of ownership, so it really pays to be extra cautious when starting out.

"BIKE NUT" SUPPORT

I belong to the "Nugget" motorcycle club of Southern California sanctioned by the SCMA, and have been riding bikes for eight years. I own two H-Ds, a chopped Sporty, and a chopped FLH. If someone calls me a "bike nut," I take it as a compliment. It is my opinion that the word "nut" used in this way symbolizes a person with an intense interest in motorcycles.

YN2 Lynn J. Rozar
Fleet Training Center
Naval Station, San Diego
San Diego CA 92136

We're with you all the way. "Nut" means enthusiast, and is not derogatory.



Address your letters to:
Editor
DRIVER Magazine
AFISC/SEDD
Norton AFB CA 92409

Answer to "WHAT SHOULD YOU DO?" *See page 19 before reading*

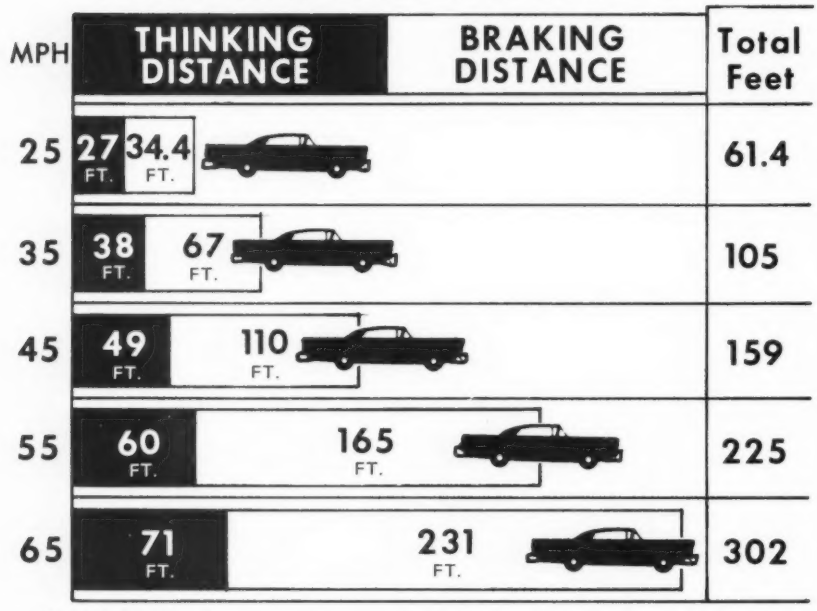
You're right if you selected "A." EASE OFF THE ACCELERATOR, KEEP WHEELS STRAIGHT AND COAST ACROSS BRIDGE.

The only safe thing to do is coast across. You don't want your back wheels either dragging or pushing, so don't accelerate or decelerate.

A good thing to remember is that water on a bridge will freeze before it does on a road. Warmth from the earth will retard freezing on the road, but the cold air circulating under the bridge decreases its temperature considerably. •

STOPPING DISTANCE

It takes longer than you think . . .



THINKING DISTANCE — distance traveled before brakes are applied while driver is reacting to danger.

BRAKING DISTANCE — distance traveled after brakes have been applied.

Information courtesy California Highway Patrol

ABOUT MISS DRIVER *See Back Cover*

Green-eyed Cheryl Abney comes from Norwalk, California. The 19-year-old blonde works as a dental assistant, and plans to become a dental hygienist. Cheryl holds the titles of Miss Southern California, Miss California Beauty, and Miss Norwalk Chamber of Commerce. When not working, she pursues her interests of water skiing, volleyball, badminton, snow skiing, and going to the beach. Cheryl is alarmed at the way Southern California drivers seem to be in such a rush wherever they go. As a result, she plays it cool by being extra careful whenever she drives. •

GOOD NEWS FOR ARMY MOTORCYCLISTS

DRIVER received word the Army has approved a suggestion to permit motorcyclists to wear protective clothing over their uniforms. A change will be made to AR 670-5, and may also include approval for use of brightly-colored overgarments to increase the visibility of the motorcyclist.

Army motorcyclists should check with their safety offices concerning details of the new reg, and its date of implementation.

Similar regulations are already in effect in the Navy and Air Force. Motorcyclists not familiar with these regs should check them out; they contain some good info. For example, Air Force Regulation 127-5, dated 3 August 1973, includes suggestions as to how the bike rider can make himself more visible to the car driver. Suggestions include: (1) Riding with headlight on—day or night, (2) Installation of a flexible wand, either reflectorized or with high-visibility pennant attached (good tip for the bicycle rider also), and (3) Application of reflectorization to body and/or wheels of cycle. •

(Info courtesy SP5 Richard G. Shaw, Motorcycle Safety Instructor, 31st ADA Brigade/ADMSA-S, Homestead AFB FL 33030)

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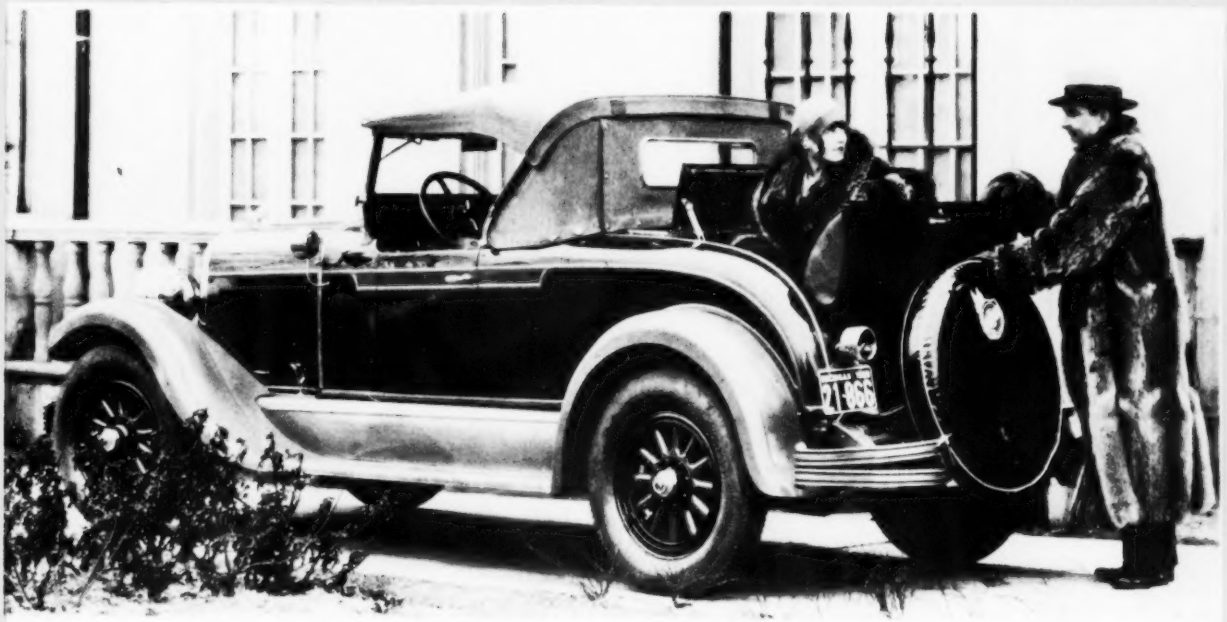

"No dear, one of us has to drive."

PET PEEVE

Send YOUR "Pet Peeve" to:

Editor, DRIVER Magazine
AFISC/SEDD
Norton AFB, CA 92409

My "Pet Peeve" is the guy who insists on remaining in the fast lane of a freeway, even when it is obvious he is moving slower than the normal flow of traffic. He has the "I'm-NOT-going-to-move-out-of-this-lane attitude.

Thanks to:

LCDR E. S. Schweitzer
Naval Reserve Center
Santa Ana, CA 92675

"Hi there! You know, I've heard some pretty nutty arguments against wearing safety belts; like the one about being trapped if your car takes a dive in the water. This kind of thinking just doesn't make sense to me. Sure, it's possible to be trapped, but highly unlikely. You've got to think of the odds, and the odds for survival in any accident are much more in your favor if you use safety belts. As far as I'm concerned, wearing safety belts is the 'in' thing to do. I hope you agree."
miss driver
CHERYL ABNEY